

## Derivatives of Inverse Functions

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

Find the derivative of  $y$  with respect to  $x$ .

1)  $y = 3 \sin^{-1} (5x^4)$  1) \_\_\_\_\_

- A)  $\frac{60x^3}{\sqrt{1-25x^8}}$       B)  $\frac{60x^3}{\sqrt{1-25x^4}}$       C)  $\frac{60x^3}{1-25x^8}$       D)  $\frac{3}{\sqrt{1-25x^8}}$

2)  $y = \cos^{-1} (5x^2 - 4)$  2) \_\_\_\_\_

- A)  $\frac{10x}{1+(5x^2-4)^2}$       B)  $\frac{10x}{\sqrt{1-(5x^2-4)^2}}$   
C)  $\frac{5}{\sqrt{1+(5x^2-4)^2}}$       D)  $\frac{-10x}{\sqrt{1-(5x^2-4)^2}}$

3)  $y = \tan^{-1} \frac{4x}{5}$  3) \_\_\_\_\_

- A)  $\frac{-20}{16x^2+25}$       B)  $\frac{20}{16x^2+25}$       C)  $\frac{4}{\sqrt{25-16x^2}}$       D)  $\frac{25}{16x^2+25}$

4)  $y = 4x^3 \sin^{-1} x$  4) \_\_\_\_\_

- A)  $\frac{4x^3}{\sqrt{1-x^2}}$       B)  $\frac{4x^3}{1+x^2} + 12x^2 \sin^{-1} x$   
C)  $\frac{1}{\sqrt{1-x^2}} + 12x^2$       D)  $\frac{4x^3}{\sqrt{1-x^2}} + 12x^2 \sin^{-1} x$

5)  $y = -\cot^{-1} \frac{8x}{7}$  5) \_\_\_\_\_

- A)  $\frac{-56}{64x^2+49}$       B)  $\frac{49}{64x^2+49}$       C)  $\frac{56}{64x^2+49}$       D)  $\frac{8}{\sqrt{49-64x^2}}$

6)  $y = -\csc^{-1} \left( \frac{8x+9}{3} \right)$  6) \_\_\_\_\_

- A)  $\frac{24}{|8x+9| \sqrt{(8x+9)^2-9}}$       B)  $\frac{24}{\sqrt{(8x+9)^2-9}}$   
C)  $\frac{-24}{(8x+9) \sqrt{(8x+9)^2-1}}$       D)  $\frac{-24}{1+(8x+9)^2}$

Answer Key

Testname: DERIVATIVES OF INVERSE FUNCTIONS

- 1) A
- 2) D
- 3) B
- 4) D
- 5) C
- 6) A